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Finnish Transport and Communications Agency

Maritime digitalization and e-Navigation

What do they mean in practice?



Table of content

- ▶ Maritime Digitalization
- ▶ e-Navigation in practice, current topics on S-100
- ▶ Finland's approach to national cooperation in maritime digitalisation
- ▶ Status of the ISMD (IMO Strategy on Maritime Digitalization)

Maritime Digitalization-

- ▶ Systemic transformation that challenges our ways of thinking, our structures, and our operating models
- ▶ A systemic change requires new forms of leadership and deeper collaboration
- ▶ Requires constant learning and the ability to let go of old practices



Maritime Digitalization- Data governance

- ▶ Data - critically important
 - ▶ Information management process
 - ▶ Roles and responsibilities
 - ▶ Data quality, reliability and up-to-date data
 - ▶ seamless end-to-end data process



Maritime Digitalization- Network Governance

- ▶ Regulatory challenge: International debate over spectrum ownership and Direct-to-Device use (WRC-27, ECC)

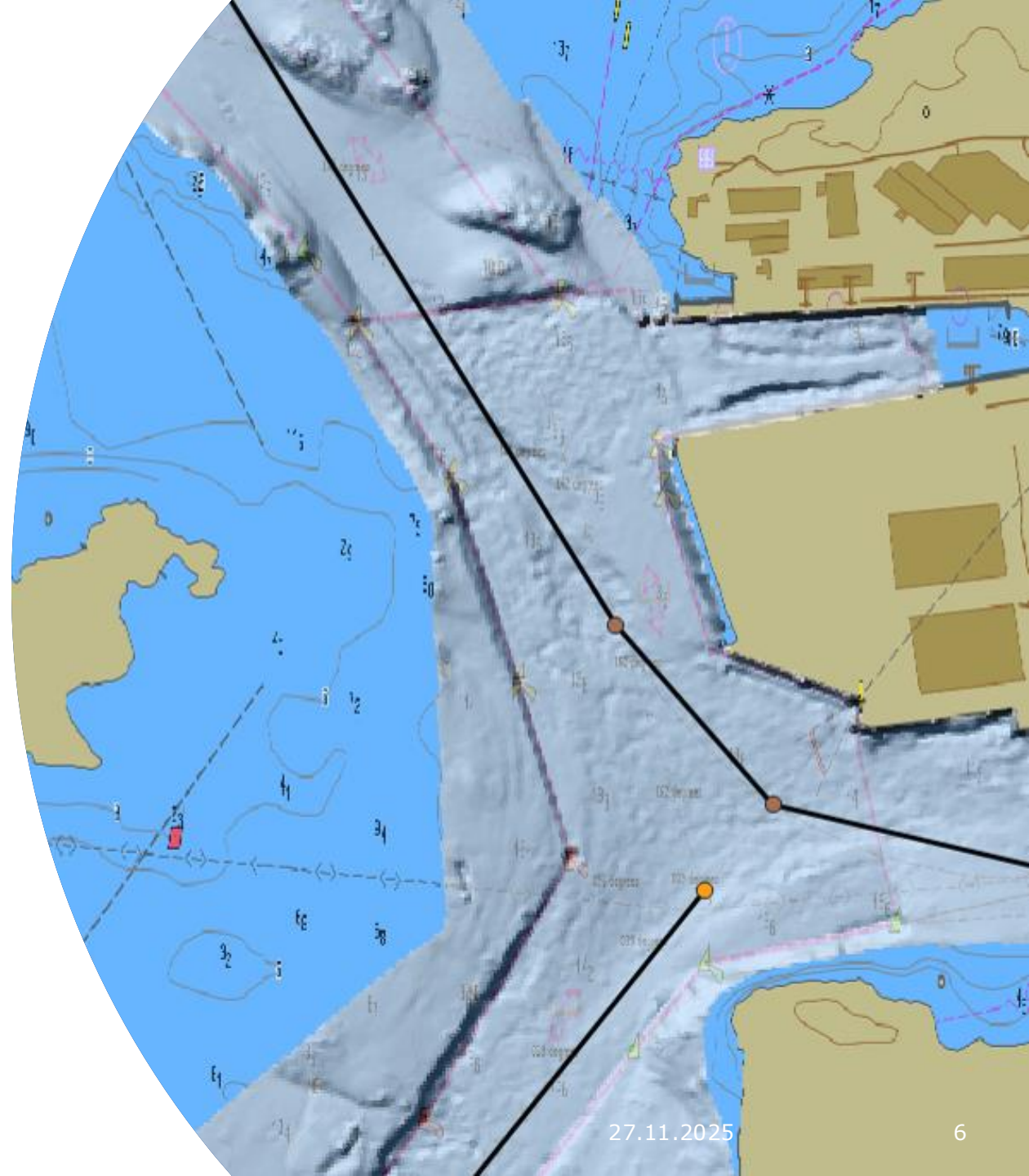
Connectivity

- ▶ Shared understanding of what communication and services are needed — and where
- ▶ Needs must be defined through use cases — services should follow operational needs



Maritime Digitalization-Implementation

- ▶ Pilots and trials are essential to identify viable concepts and to gain operational experience
- ▶ Integrating the outputs of projects and initiatives into business operations
- ▶ Encouraging the adoption of near-term outputs (e.g. the S-100 data products to be released in 2026)

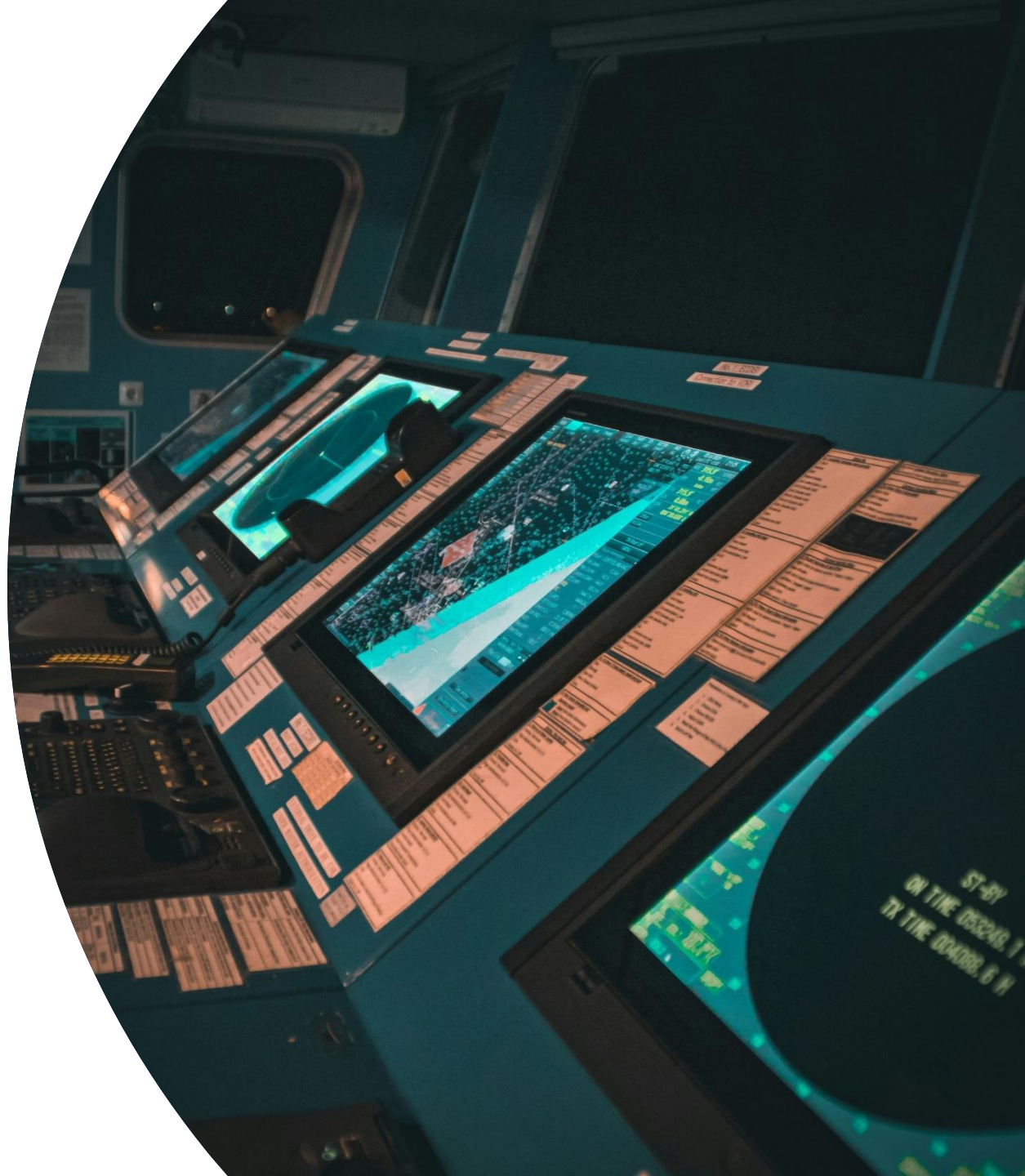


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e-Navigation in practice

Current topics on S-100



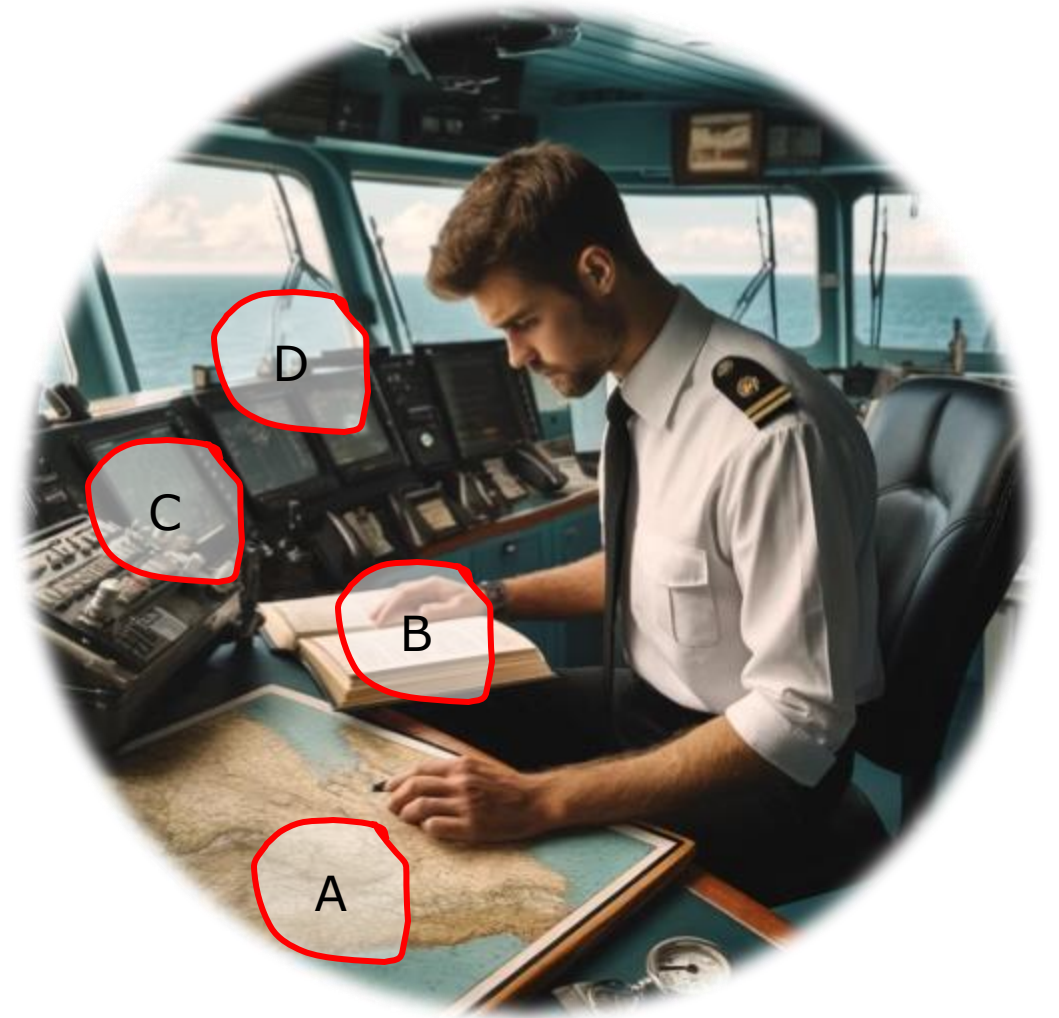
E-navigation - Redefining the Future of Navigation

- ▶ IMO-defined framework for harmonised maritime data and services
- ▶ Integrated, user-focused situational picture across ship and shore
- ▶ Standardised information model for interoperable maritime data
- ▶ Part of the broader digitalisation of maritime information flows
- ▶ Enables safer, smoother and more predictable navigation and operations



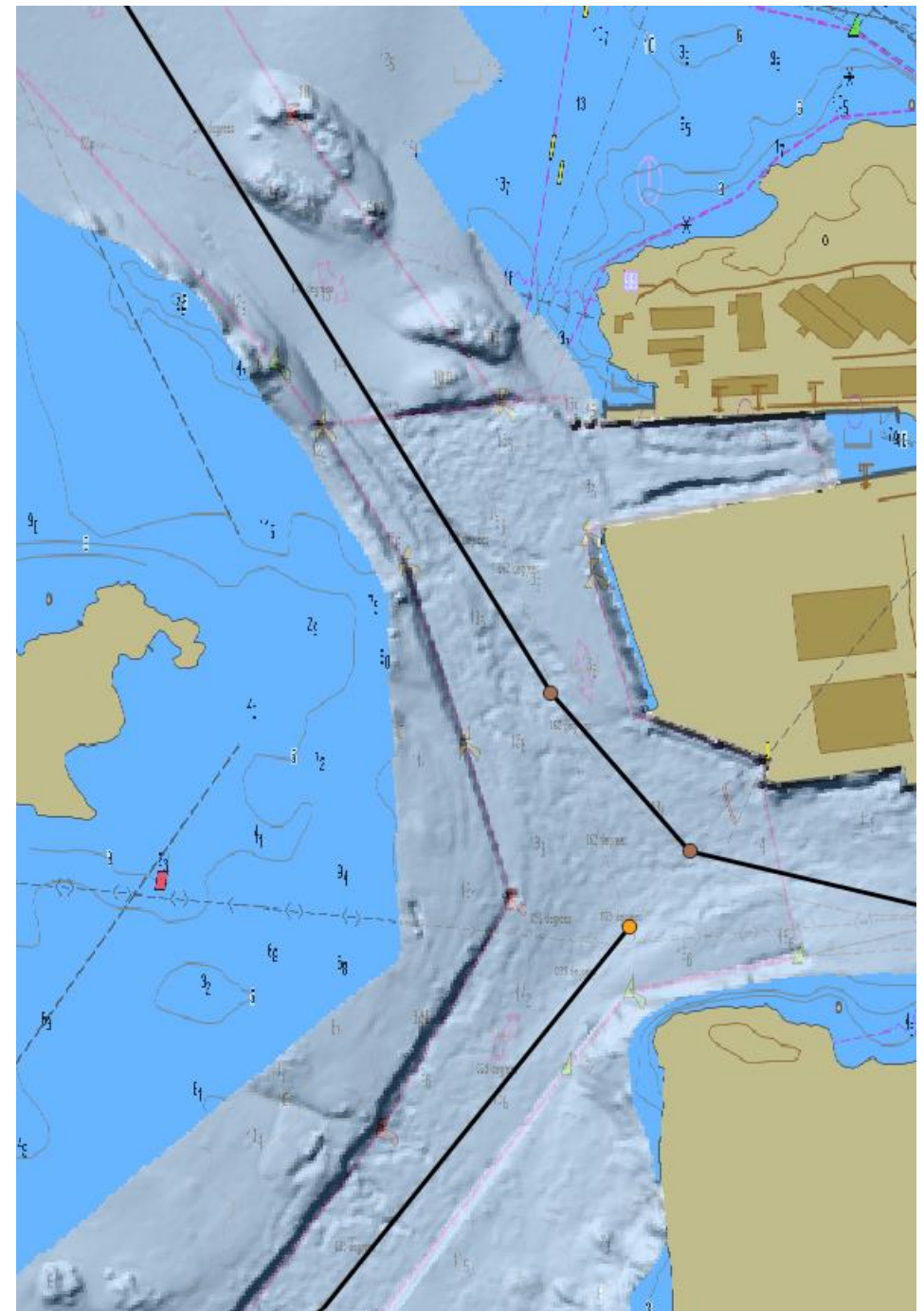
S-100 - more than just nautical charts

- ▶ e-Navigation services are implemented using S-100 product specifications
- ▶ In the navigation environment, S-100 includes the information required for navigation, such as:
 - (A) charts,
 - (B) publications,
 - (C) maritime communications, and
 - (D) onboard systems / environmental condition data
- ▶ It also covers new types of data generated through data integration or not yet commonly available onboard vessels (e.g. new environmental condition data, more detailed seabed topography, dynamic/real-time situational information)



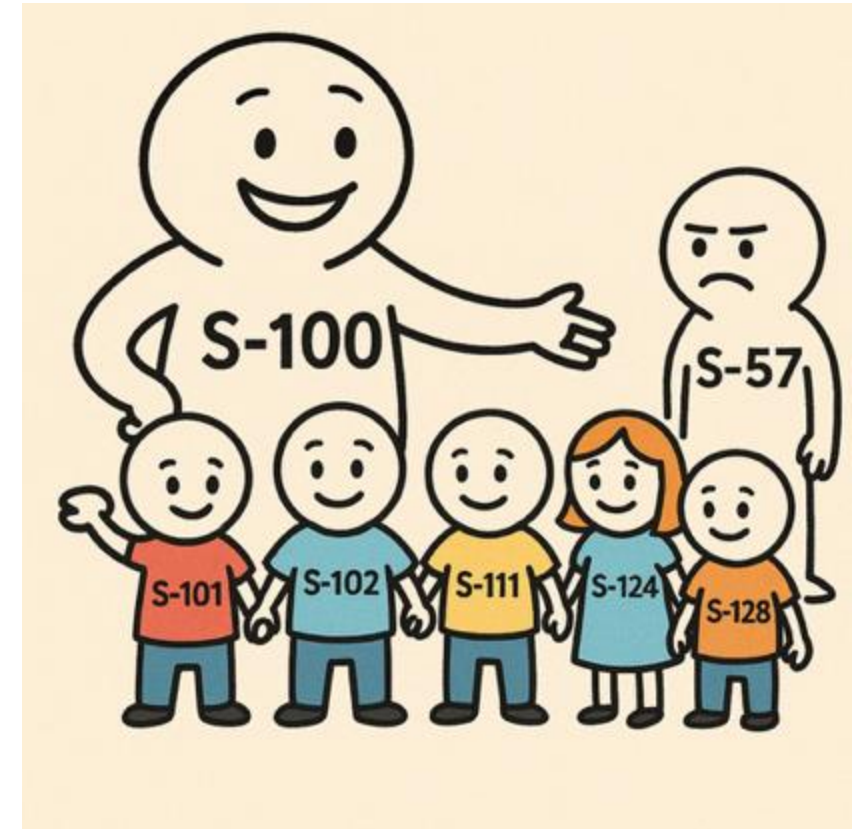
First S-100 products released – 2026-2027 (Finland), phase 1

- ▶ S-124 Navigational warning service
- ▶ S-101 is the new ENC, to be used in ECDIS (alongside S-57 for near future)
- ▶ S-102 is a bathymetric model to be used in ECDIS
- ▶ S-104 is a water-level product to be used in ECDIS
 - ▶ Adjustment of depth in ECDIS based on water level possible in S-100
 - ▶ S-102 is a detailed depth model, where S-57 / S-101 contain only preformatted depth-areas. (Higher degree of interoperability.)
- ▶ S-111 Surface Currents



S-100 products, phase 2

- ▶ S-98 defines interoperability requirements for S-100 products and specifies the mandatory products an S-100-compliant ECDIS must support
 - ▶ **S-122** Marine Protected Areas
 - ▶ **S-123** Marine Radio Services
 - ▶ **S-127** Marine Traffic Management
 - ▶ **S-131** Marine harbour infrastructure
- ▶ Non mandatory
 - ▶ **S-125** Marine Aids to Navigation valinnainen (Aton and status)
 - ▶ **S-411** Dynamic Ice Information
 - ▶ **S-412** Weather and Wave Warnings



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Status of the ISMD

IMO Strategy on Maritime
Digitalization



IMO to develop global strategy for maritime digitalization



- ▶ A comprehensive strategy that harnesses emerging technologies to turbo-charge efficiency, safety and sustainability in the shipping industry.
- ▶ IMO FAL Committee (49): work plan for developing the Strategy on Maritime Digitalization, set to be adopted by the IMO Assembly by the end of 2027.
- ▶ Correspondence Group to define the strategy's scope, key objectives and implementation framework.
- ▶ "The IMO Maritime Digitalization Strategy is a game-changing effort to make smooth, seamless, smart shipping a reality. It will help integrate vessels and ports, improve logistics and optimize routes, while reducing greenhouse gas emissions. We must work together to ensure the strategy serves all."

IMO Secretary-General Arsenio Dominguez

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Finland's approach to national cooperation in maritime digitalisation

Finland's approach to national cooperation in maritime digitalisation

► Why it's needed

- Global standards – national implementation
- Fast, interconnected changes
- Avoiding overlaps & gaps

► How it's organised

- Cross-agency coordination with stakeholder involvement
- Joint, theme-based planning across the ecosystem
- Shared situational picture & terminology

► Impact

- Clearer priorities
- Better resource use
- Stronger ecosystem alignment



**Thank you
for your
interest!**

